Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

TITLE V (DRAFT PERMIT) NO. V-04-025
KINGSFORD MANUFACTURING COMPANY
SUMMER SHADE, KY
OCTOBER 4, 2004
RALPH E. GOSNEY, REVIEWER
PLANT I.D. # 21-169-00012
APPLICATION LOG # 55677

SOURCE DESCRIPTION:

DAQ acknowledges receipt on April 23, 2003, of an initial Title V air quality permit application with minor revisions for the Kingsford Manufacturing Company Summer Shade facility. Minor revisions to the application were also received at several dates. Summaries of the minor revisions are as follows:

Document Name	Date Received	Minor Modification Summary
Initial Title V Operating Permit Application for a Charcoal Manufacturing Facility	4/23/03	1) Increase plant's coal drop points limit from 50,000 tons/yr to 100,000 tons/yr 2) Request for annual limit on volatile organic compounds (VOC) to 91 tons/yr and solvent treated briquet (STB) rate of 37,000 tons/yr (superceded by request 7)
Alternative Wood Truck Unloading Operation	10/13/03	3) Addition of emission unit "Alternative Wood Truck Receipt" 4) Change in vehicle miles traveled (VMT) on roadway emissions
Application for Minor Permit Revisions to Permit F-01-005	10/24/03	5) Increase in hourly briquet dryer/cooler production rate 6) Emission calculations and modification for coal drop points 7) STB emission basis on lbs VOC per ton of STB produced and request for 98 tons/yr limit on VOC
New Wood Pile and Truck Unloading Operation, and New Storage Silos	3/3/04	8) Addition of emission units "Pile Wind Erosion and Bulldozer Traffic, Plant Roadways, and Outside Wood Storage" 9) New lime silo, new char silo, and conversion of existing lime to starch silo
New Truck Parking Lot	6/17/04	10) New warehouse road and new lot

The initial Title V application was deemed complete on September 16, 2003 (60 days after receiving requested material).

Kingsford provided an updated BACT analysis for the plant briquet dryers and coolers to demonstrate that the requested emission limits for these sources still represent BACT. The emission limits for the briquet dryers and coolers have not been changed, although the throughput rates of briquets through the units have increased. Emissions from the dryers are based predominantly by the amount of after combustion chamber (ACC) gases fed to the units for drying, not the rate of briquets through the units.

The plant is classified as a "charcoal production plant", which is one of the 28 listed 100-tpy major source categories in the Title V and PSD regulations. Metcalfe County is classified as "attainment" or "unclassified" for all pollutants, pursuant to 401 KAR 51:010.

The facility was issued permit F-01-005 on July 2, 2001, subject to Prevention of Significant Deterioration (PSD) regulations for construction/modification increases in particulate matter (PM), particulate matter less than 10 microns (PM_{10}), and nitrogen oxides (NO_x) of over 100 tons per year (tpy). The facility is classified as a Title V major source of air pollution, based on the potential to emit more than 100 tpy of PM_{10}, NO_x, and volatile organic compounds (VOC). The Kingsford Summer Shade plant is also classified as a major source as defined by 401 KAR 51:017, based on the potential to emit more than 100 tpy of PM, PM_{10}, NO_x, and VOC. Potential HAP emissions from the Summer Shade facility are below the major source thresholds of 10 tpy for any single HAP and 25 tpy for any combination of HAPs.

The permittee has existing synthetic minor permits for limiting the emission of sulfur dioxide (SO_2). The permittee has agreed to limit SO_2 emissions from Emission Unit 01, to preclude PSD significant revision applicability for the modification of the furnace/wood dryer (F-01-005), and from Emission Unit 02 and 03, for the installation of Briquet Dryer #3 and Briquet Cooler #3 (F-01-005 Revision 1).

The proposed facility modifications will result in minor emissions increases, per PSD regulations. The facility potential emission increases from the minor revisions to the facility are as follows:

1. Increase plant's coal drop points limit from 50,000 tons/yr to 100,000 tons/yr	see #5
2. Addition of emission unit "Alternative Wood Truck Receipt"	1.89 tpy of PM 0.89 tpy of PM_{10}
3. Change in vehicle miles traveled (VMT) on roadway emissions	2.73 tpy of PM 0.67 tpy of PM_{10}
4. Increase in hourly briquet dryer/cooler production rate	(no change in emissions) 0.0 tpy of PM, PM_{10}, and NO_x
5. Emission calculation and modification for coal drop point	0.096 tpy of PM 0.046 tpy of PM_{10}
6. STB emission basis on lbs VOC per ton of STB produced and request for 98 tons/yr limit on VOC	(no change in emissions) 0.0 tpy of VOC
7. Addition of emission units "Pile Wind Erosion and Bulldozer Traffic, Plant Roadways, and Outside Wood Storage"	2.75 tpy of PM 1.29 tpy of PM_{10}
8. New lime silo, new char silo, and	0.24 tpy of PM

conversion of existing lime to starch silo	0.23 tpy of PM_{10}
9. New warehouse road and new lot	1.88 tpy of PM 0.50 tpy of PM_{10}
TOTALS	0.0 tpy of VOC 9.59 tpy of PM 3.63 tpy of PM_{10}

The following is a list of significant emission units.

E. Unit 01 Wood Dryer and Furnace Operations

E. Unit 02 Briquet Drying Operations

E. Unit 03 Briquet Cooling Operations

E. Unit 04 Charcoal Manufacturing Operations

E. Unit 05 Material Handling Operations and Plant In/Out Roadways

E. Unit 06 Solvent Treated Briquet (STB) Production Operations

E. Unit 07 Char, Lime, and Carbonaceous Material Storage Silos

E. Unit 08 Alternative Wood Truck Unloading, Warehouse Road, and Warehouse Lot

E. Unit 09 Nitrate Silo

COMMENTS:

E. Unit 01 Wood Dryer and Furnace Operations

Wet wood is first dried in the wood dryer from heat re-circulated back from the furnace and after combustion chamber (ACC). The dried wood is then made into a char material in the furnace. The maximum operating rate is 7 tons of dry char produced. Kingsford has stated the dry wood/dry char ratio varies between 4.2 to 6 tons of dry wood per ton of dry char. Emissions from the wood dryer and the retort furnace go through cyclone separators. The gases from the cyclone exhausts are combined in the ACC.

The following regulations are applicable to the unit:

401 KAR 59:010	New process operations applicable to emission units commenced on or after July 2, 1975.
401 KAR 51:017	Prevention of significant deterioration of air quality (PSD) – Best Available Control Technology (BACT) for nitrogen oxides (NO_x), particulate matter (PM), and particulate matter less than 10 microns (PM_{10})
40 CFR 64	Compliance Assurance Monitoring (CAM) - for PM

BACT analysis for NO_x, PM and PM_{10} emissions for Emission Unit 01 was previously performed and accepted for the 2001 air quality PSD permit to construct and operate. There will be no additional potential to emit emissions from this unit. The existing BACT includes the following:

PM/PM_{10}	Use of the existing high-efficiency cyclone collectors and the ACC afterburner
NO_x	Use of low-NO_x burners and staged combustion in the ACC

The ACC afterburner control for PM/PM_{10} is the only BACT that is considered a control device per 40 CFR 64 definitions and applicability for Compliance Assurance Monitoring (CAM). Pursuant to 401 KAR 51:017, the ACC shall be in operation and be operated at a temperature greater than 1,400^{o}F (3-hour average) any time char is being produced. Pursuant to 40 CFR 64, the permittee shall provide reasonable assurance of compliance with emission limitations or standards for the anticipated range of operations including the following:

a) The permittee shall perform a qualitative visual observation of the opacity of emissions from the stack on a weekly basis and maintain a log of the observations. If visible emissions from the stack are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9. If emissions are in excess of the applicable opacity limit, then an inspection shall be initiated of control equipment for all necessary repairs.

b) The permittee shall monitor the char production of the wood dryer and furnace operations and hours of operation on a monthly basis.

c) The permittee shall monitor the ACC combustion temperature from a thermocouple located in a representative location in the ACC combustion chamber every second. The temperature and a 15-minute average temperature shall be displayed on a screen in the control room. A 3-hour rolling average temperature shall be calculated.

d) The permittee shall monitor the ACC combustion temperature from a second thermocouple located in a representative location in the ACC combustion chamber weekly.

e) The permittee shall maintain, calibrate, and operate according to manufacturer's specifications and/or standard operating procedures, a monitoring device for the measurement of temperature at the ACC.

Pursuant to 401 KAR 51:017, NO_x emissions from the unit shall not exceed 91.0 pounds per hour, and the maximum PM/PM_{10} emissions from the unit shall not exceed 59.5 pounds per hour. The limit of 59.5 pounds per hour is less than limit determined from the 410 KAR 59:010 limit when the char production rate is greater than or equal to 21.84 tons of dry wood / hr.

Pursuant to 401 KAR 59:010, **if** the dry wood production rate is less than 21.84 tons of dry wood/hr, the PM emissions from the unit (wood dryer and furnace) shall not exceed the following (limit always less than or equal to 59.5 lb PM/hr):

$$\text{Combined Allowable Rate of Emission in lb of PM/hr} = 17.31(P_1)^{0.16} + 17.31(P_2)^{0.16}$$

where P_1 = tons wet wood per hour to dryer minus uncombined moisture
P_2 = tons of dry wood per hour to furnace

To preclude 401 KAR 51:017, sulfur dioxide (SO_2) emissions from the unit shall not exceed 1.5 lbs/ton of char produced. Pursuant to 401 KAR 59:010, Section 3(1), emissions from the unit shall not exceed twenty (20) percent opacity based on a six-minute average.

An undetermined percentage of emissions were emitted out the ACC stack during the initial stack test. The emission factor obtained from the testing required in the existing permit, F-01-005 (Revision 3) was not the total emissions from the unit (only the percentage of emissions that went out the ACC stack). ACC stack testing is required in the draft permit V-04-025 for PM, NO_x, VOC, PM_{10}, and SO_2 emissions, under the conditions with 100% of emission going out the ACC stack. The average production rate of char shall be measured during the emission test, recorded, and reported with the emission test results.

E. Unit 02 Briquet Drying Operations

Process heat for the briquet dryers is typically provided by the ACC exhaust gases. In the event that the ACC is not in operation, process heat will be provided to the briquet dryers by a natural gas-fired auxiliary burner with a maximum rated capacity of 20 mmBtu per hour.

Briquet Dryers #1 and #2 were permitted under PSD regulations in permit F-01-005 and have BACT operating and emission limits. Operating and emission limits were requested by Kingsford for the installation and operation of Briquet Dryer #3 to preclude PSD significant revision applicability in permit F-01-005 (Revision 3). The operating rate was increased to 8.5 tons of dry briquets per hour for each dryer (25.5 tons/hr total) in the draft permit V-04-025. Kingsford provided an updated BACT analysis for the plant briquet dryers to demonstrate that the requested emission limits for these sources still represent BACT. The emission limits for the briquet dryers have not been changed, although the throughput rates of briquets through the units have increased. Emissions from the dryers are based predominantly by the amount of after combustion chamber (ACC) gases fed to the units for drying, not the rate of briquets through the units.

The applicable regulations to the briquet dryers are as follows:

401 KAR 59:010	New process operations applicable to emission units commenced on or after July 2, 1975.
401 KAR 51:017	Prevention of significant deterioration of air quality (PSD) – Best Available Control Technology (BACT) for nitrogen oxides (NO_x), particulate matter (PM), and particulate matter less than 10 microns (PM_{10}) for Briquet Dryers #1 and #2.

For compliance with the NO_x and PM/PM_{10} emission limits,

> Actual emission rate = [Monthly briquet production] x [Emission factor observed during most recent stack test (pounds pollutant per ton of briquets)] ÷ [Monthly hours of dryer operation]

EPA Reference Method 5 or equivalent shall be performed within 1 year from issuance of permit V-04-025 to determine the amount of PM emissions per ton of dry briquets packaged through each briquet dryer. EPA Reference Method 7 or equivalent shall be performed within 1 year from issuance of permit V-04-025 to determine the amount of NO_x emissions per ton of dry briquets packaged through each briquet dryer. The permittee shall perform a qualitative visual observation of the opacity of emissions from the stack on a weekly basis and maintain a log of the observations. If visible emissions from the stack are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9. If emissions are in excess of the applicable opacity limit, then an inspection shall be initiated of control equipment for any necessary repairs.

E. Unit 03 Briquet Cooling Operations

Briquet Coolers #1 and #2 were permitted under PSD regulations in permit F-01-005 and have BACT operating and emission limits. Operating and emission limits were requested by Kingsford for the installation and operation of Briquet Cooler #3 to preclude PSD significant revision applicability in permit F-01-005 (Revision 3). The operating rate was increased to 8.5 tons of dry briquets per hour for each cooler (25.5 tons/hr total) in the draft permit V-04-025. Kingsford provided an updated BACT analysis for the plant briquet dryers to demonstrate that the requested emission limits for these sources still represent BACT. The emission limits for the briquet coolers have not been changed, although the throughput rates of briquets through the units have increased.

The applicable regulations to the briquet dryers are as follows:

401 KAR 59:010	New process operations applicable to emission units commenced on or after July 2, 1975.
401 KAR 51:017	Prevention of significant deterioration of air quality (PSD) – Best Available Control Technology (BACT) for particulate matter (PM), and particulate matter less than 10 microns (PM_{10}) for Briquet Dryers #1 and #2.

For compliance with the PM/PM_{10} emission limits,

> Actual emission rate = [Monthly briquet production] x [Emission factor observed during most recent stack test (pounds pollutant per ton of briquets)] ÷ [Monthly hours of dryer operation]

EPA Reference Method 5 or equivalent shall be performed within 1 year from issuance of permit V-04-025 to determine the amount of PM emissions per ton of dry briquets packaged through each briquet cooler. The permittee shall perform a qualitative visual observation of the opacity of emissions from the stack on a weekly basis and maintain a log of the observations. If visible emissions from the stack are seen (not including condensed water vapor within the plume), then the

opacity shall be determined by Reference Method 9. If emissions are in excess of the applicable opacity limit, then an inspection shall be initiated of control equipment for any necessary repairs.

E. Unit 04 Charcoal Manufacturing Operations

Each emission point in the Charcoal Manufacturing Operation was permitted under PSD regulations in permit F-01-005 and have BACT operating and emission limits. The emission unit is also subject to the new process operations regulation, 401 KAR 59:010. The operating rate in the draft permit V-04-025 was increased to 25.5 tons of dry briquets per hour for three emission points. The emission points with the increased operating rate include the following: STOR 4001 - Briquet Handling and Storage Dust Collector #1 (north); STOR 4002 - Briquet Handling and Storage Dust Collector #2 (south); and STOR 4003 - Packaging Operations Dust Collector and Fines Tank. The operating rate was increased in the draft permit V-04-025, but there was no increase in potential emissions, based on same fan blowers and filters and existing PSD limit of 0.01 gr/scf of PM/PM_{10}.

Pursuant to 401 KAR 51:017, all of the emission points for the Emission Unit 04 shall be equipped with a fabric filter. The fabric filters shall control emissions of PM and PM_{10} and shall be in operation and be operated properly, in accordance with manufacturer's specifications and/or standard operating procedures at all times the sources are in operation. The silo and mix tank dust collectors are considered in operation any time material is being conveyed into the silos. PM/PM_{10} emissions from each of the fabric filter collectors serving the sources shall not exceed an outlet PM/PM_{10} concentration of 0.01 grains per standard cubic foot (gr/scf). Compliance with the emission limitations is demonstrated during normal operations of the fabric filters, based on controls design and good operating and maintenance practices.

E. Unit 05 Material Handling Operations and Plant In/Out Roadways

Each emission point in the Material Handling Operations and Plant In/Out Roadways was permitted under PSD regulations in permit F-01-005 and have BACT operating and emission limits. The emission unit is also subject to the fugitive emissions regulation 401 KAR 63:010. The operating rate in the draft permit V-04-025 was increased to 100 tons per year for EQPT 5001 – Coal Drop Points. The operating rate was increased in the draft permit V-04-025, but there was no change in the PSD emission limit. The change in emissions from the Coal Drop Points is less than 1 ton per year.

Pursuant to 401 KAR 51:017, the permittee shall operate the emissions sources listed in this section in such a manner as to minimize fugitive dust emissions and PM/PM_{10} emissions. Compliance with operating limitations to suppress and minimize fugitive dust emissions will be demonstrated by speed controls, and good operating practices during material handling.

E. Unit 06 Solvent Treated Briquet (STB) Production Operations

The emissions unit was identified as a minor source (emissions of VOC less than 100 tons per year) by the previous owner. The permittee has changed the method of operations, and requests an emission limit of VOC below 100 tons per year with an operating restriction of 40,000 tons per year of STB produced. As a request by the permittee to insure no change in emissions and to preclude 401 KAR 51:017 applicability for a significant emissions increase, VOC emissions shall not exceed

98 tons per year.

E. Unit 07 Char, Lime, and Carbonaceous Material Storage Silos

Emission Unit 07 consists of 2004 proposed units and existing units that have not been modified and are not included in permit F-01-05 (Revision 3). The unit is subject to 401 KAR 59:010, New process operations applicable to emission units commenced on or after July 2, 1975. In order to preclude 401 KAR 51:017 significant revision applicability for the installation of Char Silo #4, the maximum loading rate of Char Silo #4 shall not exceed 7 tons per hour of char. In order to preclude 401 KAR 51:017 significant revision applicability for the installation of the Lime Silo, the maximum loading rate of Lime Silo shall not exceed 35 tons per hour of lime. The Lime Silo shall be equipped with a fabric filter. The fabric filter shall control emissions of PM and PM_{10} and shall be in operation and be operated properly, in accordance with manufacturer's specifications and/or standard operating procedures at all times the source is in operation. The silo is considered in operation any time material is being conveyed into the silo.

Pursuant to 401 KAR 59:010, Section 3(2), particulate matter emissions into the open air shall not exceed $[3.59(P)^{0.62}]$ lbs/hour based on a three-hour average where P is the processing rate in tons per hour. For compliance with the PM emission limit, an emission factor of 0.0007 lbs PM/ton of char shall be used, based on the permittee application, which states minimal dust from char transfer to the silo by the quenching of the char with water after it leaves the furnace. The permittee shall perform a qualitative visual observation of the opacity of emissions from each stack on a weekly basis and maintain a log of the observations. If visible emissions from the stacks are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9. If emissions are in excess of the applicable opacity limit, then an inspection shall be initiated of control equipment for any necessary repairs.

E. Unit 08 Alternative Wood Truck Unloading, Warehouse Road, and Warehouse Lot

Emission Unit 08 consists of 2004 proposed emission points: Alternative Wood Truck Unloading; Warehouse Road; Warehouse Lot; Walking Floor Trailer Unloading for Unsized Pile, and Unsized Wood Pile and Bulldozer Traffic. The unit is subject to the fugitive emissions regulation, 401 KAR 63:010.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne, and discharge of visible fugitive dust emissions beyond the property line is prohibited. Compliance will be demonstrated by the good operating procedures and good operating practices during material handling.

E. Unit 09 Nitrate Silo

Emission Unit 09 is proposed for 2004. The unit is subject to 401 KAR 59:010, New process operations applicable to emission units commenced on or after July 2, 1975. In order to preclude 401 KAR 51:017 significant revision applicability for the installation of the nitrate silo, the emission unit shall be equipped with a fabric filter. The fabric filters shall control emissions of PM and PM_{10} and shall be in operation and be operated properly, in accordance with manufacturer's specifications

and/or standard operating procedures at all times the sources are in operation. The silo fabric filter is considered in operation any time material is being conveyed into the silo. In order to preclude 401 KAR 51:017 significant revision applicability for the installation of the nitrate silo, PM/PM_{10} emissions from the fabric filter collectors serving the source shall not exceed an outlet PM/PM_{10} concentration of 0.01 grains per standard cubic foot (gr/scf). The permittee shall record the occurrence and duration of each incident when the sources are in operation, but the associated fabric filter is not.

Regulations not applicable:

40 CFR, Part 64 – Compliance Assurance Monitoring, does not apply for the monitoring of NO_x emissions from the ACC, because low-NOx burners and staged combustion are not controls, per 40 CFR, Part 64 definitions.

NSPS Subpart Dc – The boiler has less than 10 MMBtu/hr of heat input, and thus Subpart Dc is inapplicable.

NSPS Subpart Kb – Solvent storage tank capacity is less than 10,000 gallons, and thus Subpart Kb is inapplicable.

NESHAP 40 CFR Part 63, Subpart DDDDD - Industrial Boilers and Process Heater MACT: The facility is not a major source of HAPs.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.

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